

WHAT IS CLAIMED IS:

1. A semiconductor device, comprising:
a concave portion formed in a semiconductor
substrate;
- 5 a first gate insulating film formed selectively on
said semiconductor substrate;
- ~~W.M. K. 19~~
a second gate insulating film formed in at least
the bottom surface of said concave portion;
- 10 a first conductive film formed on said first gate
insulating film; and
- a second conductive film formed on said second
gate insulating film.
2. The semiconductor device according to claim 1,
wherein the second gate insulating film and the second
15 conductive film are formed on the bottom surface of the
concave portion, on at least one side surface of the
concave portion and on the semiconductor substrate, and
the surface of the first conductive film is flush with
the surface of the second conductive film formed on the
20 semiconductor substrate.
3. The semiconductor device according to claim 1,
wherein the second gate insulating film is formed in
the corner portion of the concave portion.
4. The semiconductor device according to claim 1,
25 wherein an insulating film is formed on the second
conductive film, and the concave portion is filled with
the insulating film, the second gate insulating film

and the second conductive film.

5 5. The semiconductor device according to claim 1,
wherein the concave portion is filled with the second
gate insulating film and the second conductive film,
and the surface of the second conductive film is
substantially flat.

10 6. The semiconductor device according to claim 1,
wherein the semiconductor substrate is an SOI
substrate.

15 7. The semiconductor device according to claim 1,
further comprising:

an element isolating region formed within the
semiconductor substrate such that the second gate
insulating film and the second conductive film are
allowed to extend over said element isolating region;

a contact electrically connected to that portion
of the second conductive film which is positioned on
the element isolating region; and

20 a wiring electrically connected to said contact.

25 8. The semiconductor device according to claim 1,
wherein a plurality of concave portions are formed in
the semiconductor substrate such that these concave
portions are filled with the second gate insulating
film and the second conductive film, and the surface of
the second conductive film is substantially flat.

9. The semiconductor device according to claim 1,
wherein a plurality of gate electrodes each consisting

of the second conductive film is formed in said concave portions,

10. The semiconductor device according to claim 1,
wherein the impurity concentration in the second
5 conductive film is higher than that in the
semiconductor substrate.

11. The semiconductor device according to claim 1,
wherein said second insulating film functions as the
10 insulating film for the anti-fuse portion or for the
capacitor element.

12. A method of manufacturing a semiconductor device, comprising the steps of:

forming first, second and third concave portions
in a semiconductor substrate;

15 burying an insulating film in said first, second
and third concave portions, followed by planarizing the
surface of said insulating film until the surface of
the semiconductor substrate is exposed to the outside
so as to form an element isolating region within the
20 first concave portion;

removing the insulating film from the second and
third concave portions so as to form a aligning mark
portion in the second concave portion;

25 forming a gate insulating film on the entire
surface;

forming a conductive film on said gate insulating
film; and

selectively removing said conductive film so as to form a first gate electrode on the semiconductor substrate, and to form a second gate electrode in the third concave portion.

5 13. The method of manufacturing a semiconductor device according to claim 12, wherein a gate insulating film is formed on the entire surface, with the insulating film formed within the third concave portion partly left unremoved.

10 14. The method of manufacturing a semiconductor device according to claim 12, wherein the second gate electrode is formed on the bottom surface of the third concave portion, on the both side surfaces or one side surface of the third concave portion, and on the semiconductor substrate.

15 15. The method of manufacturing a semiconductor device according to claim 12, wherein the second gate electrode is formed in a manner to fill the third concave portion.

20 16. The method of manufacturing a semiconductor device according to claim 12, wherein the second gate electrode is formed in a manner to extend from within the third concave portion onto the element isolating region, and the contact is formed in that portion of the second gate electrode which is positioned on the element isolating region.

25 17. The method of manufacturing a semiconductor

device according to claim 12, wherein a plurality of third concave portions are formed.

18. The method of manufacturing a semiconductor device according to claim 12, wherein a plurality of second gate electrodes are formed within the third concave portion.

19. The method of manufacturing a semiconductor device according to claim 12, wherein the impurity concentration of the conductive film is higher than that of the semiconductor substrate.

20. The method of manufacturing a semiconductor device according to claim 12, wherein the second gate electrode functions as the gate electrode for the anti-fuse portion or for the capacitor element.

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